WHAT IS CLAIMED IS:

1. A crystal growth apparatus for a semiconductor thin film for radiating laser light to a semiconductor thin film formed on a base material to cause crystal growth of said semiconductor thin film in a direction substantially parallel to a main surface of said base material, comprising:

first radiation means for selectively radiating first laser light to said semiconductor thin film to melt a crystallization target area of said semiconductor thin film; and

second radiation means for selectively radiating second laser light to said base material to heat said base material at a position corresponding to an area including said crystallization target area of said semiconductor thin film, said second laser light being transmitted through said semiconductor thin film better than said first laser light; wherein

said second radiation means includes a light source for producing said second laser light, an aperture stop plate being radiated with said second laser light to form a desired aperture image, and an objective lens for forming said aperture image on the main surface of said base material.

2. The crystal growth apparatus for a semiconductor thin film according to claim 1, wherein

said second radiation means further includes irradiance distribution uniformizing means arranged between said aperture stop plate and said light source for adjusting said second laser light such that said second laser light being transmitted attains uniform irradiance distribution on a plane perpendicular to its optical axis.

3. The crystal growth apparatus for a semiconductor thin film according to claim 1, wherein

said second radiation means is configured such that said second laser light is obliquely incident on the main surface of said base material,

said objective lens is arranged substantially perpendicular to an optical axis of said obliquely incident second laser light, and

said aperture stop plate is arranged obliquely to the optical axis of said obliquely incident second laser light such that an image plane of said aperture image substantially overlays the main surface of said base material.

4. The crystal growth apparatus for a semiconductor thin film according to claim 3, wherein

an aperture provided to said aperture stop plate is adjusted to be in a trapezoidal shape such that said aperture image formed on the main surface of said base material becomes a quadrangular shape.

5. The crystal growth apparatus for a semiconductor thin film according to claim 3, wherein

said second radiation means further includes irradiance distribution uniformizing means arranged between said aperture stop plate and said light source for adjusting said second laser light such that said second laser light being transmitted attains uniform irradiance distribution on a plane perpendicular to its optical axis.

6. The crystal growth apparatus for a semiconductor thin film according to claim 1, wherein

said second radiation means is configured such that said second laser light is obliquely incident on the main surface of said base material, and

said objective lens and said aperture stop plate are arranged substantially parallel to the main surface of said base material.

7. The crystal growth apparatus for a semiconductor thin film according to claim 6, wherein

said second radiation means further includes irradiance distribution uniformizing means arranged between said aperture stop plate and said light source for adjusting said second laser light such that said second laser light being transmitted attains uniform irradiance distribution on a plane perpendicular to its optical axis.

8. The crystal growth apparatus for a semiconductor thin film according to claim 7, wherein

said second radiation means further includes radiation direction changing means arranged substantially parallel to said aperture stop plate for changing radiation direction of said second laser light such that said second laser light output from said irradiance distribution uniformizing means is obliquely incident on said aperture stop plate.

9. The crystal growth apparatus for a semiconductor thin film according to claim 8, wherein

said radiation direction changing means is a prism.

10. The crystal growth apparatus for a semiconductor thin film according to claim 8, wherein

said radiation direction changing means is a lens.

11. A crystal growth method for a semiconductor thin film for radiating laser light to a semiconductor thin film formed on a base material to cause crystal growth of said semiconductor thin film in a direction substantially parallel to a main surface of said base material, comprising the steps of:

selectively radiating first laser light to said semiconductor thin film to melt a crystallization target area of said semiconductor thin film; and

heating said base material by selectively radiating second laser light to said base material through an aperture stop plate and forming an aperture image shaped by said aperture stop plate on said base material at a position corresponding to an area including said crystallization target area of said semiconductor thin film, said second laser light being transmitted through said semiconductor thin film better than said first laser light.

12. The crystal growth method for a semiconductor thin film according to claim 11, wherein

a radiation period of said second laser light is longer than a radiation period of said first laser light, said radiation period of said second laser light including a period coinciding with said radiation period of said first laser light.